



● Axial skeleton
● Appendicular skeleton

Rheumatoid Arthritis

What Is Arthritis?

Arthritis is a general term used to describe any process that causes joint damage. There are more than 100 different types of arthritis. Most involve swelling, tenderness and pain in various parts of the body. **Osteoarthritis** is the most common type of arthritis. Other types include rheumatoid arthritis and gout.

What Is Rheumatoid Arthritis?

Rheumatoid arthritis (RA) is a chronic disease in which various parts of the body are inflamed, leading to swelling, pain, stiffness, and the possible loss of function. For unknown reasons in RA, white blood cells of the immune system attack the joint lining (**synovial membrane**) as if it were a foreign object. Continuous inflammation of the synovium gradually destroys collagen, narrowing the joint space and eventually damaging bone. In progressive RA, destruction of the cartilage underneath the fluid and inflammatory cells accumulates in the synovium to produce a pannus, a growth composed of thickened synovial tissue. The pannus then attracts more inflammatory white cells, thereby perpetuating the process.

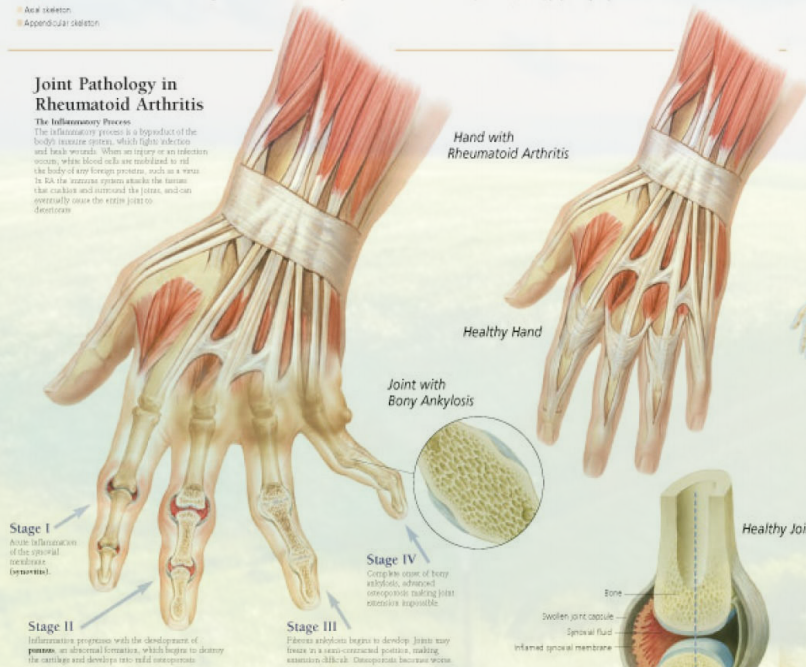
What Causes Rheumatoid Arthritis?

Rheumatoid arthritis is unlikely due to a single cause, but rather a combination of genetic and environmental factors that trigger an abnormal or defective immune response. Some experts classify rheumatoid arthritis as type 1 or type 2.

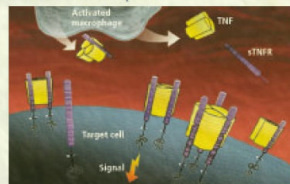
Joint Pathology in Rheumatoid Arthritis

The Inflammatory Process

The inflammatory process is a byproduct of the body's immune system, which fights infection and heals wounds. When an injury or an infection occurs, white blood cells are mobilized to rid the body of any foreign proteins, such as a virus. In RA the immune system attacks the tissues that make up and surround the joints, and can eventually cause the entire joint to deteriorate.



TNF and TNF Receptors



Controlling Inflammation

In joints with RA, a dangerous deposit called **pannus** forms and erodes cartilage. It is composed of white blood cells, joint fluid cells and other cells. Pannus is produced by **TNF-tumor necrosis factor** that may lead to bone destruction. As cartilage is destroyed, white blood cells, part of the immune response, are further attracted to the tissues. In a joint with RA they can erode healthy cartilage, contributing to the disease.

Treatment and Diagnosis of Rheumatoid Arthritis

Currently there is no cure for RA, but a great deal can be done to manage and even postpone its effects. Treatment focuses on medications and lifestyle changes. About 30% of individuals with RA have an antibody called **rheumatoid factor (RF)** in their blood. While we do not know if RF is a cause or result of RA, it is one of the indicators of rheumatoid arthritis.

Exercise

Daily exercise is essential to maintaining range of motion in joints, avoiding stiffness, and strengthening the structures that surround and protect joints. It is important to balance exercise with adequate periods of rest.

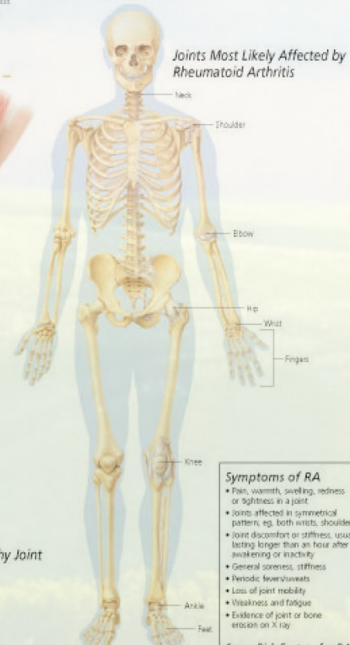
Medication

The effect of some drug therapies is to reduce inflammation, prevent damage to the bones, preserve movement, and to ease long-term side effects as possible. Nonsteroidal types of pain relief such as heat and massage can be effective. If medication is needed for pain relief, however, it is important to take the smallest effective dose of the anti-inflammatory medication.

Surgery

When all other methods of pain relief have failed, surgery might become an option. Surgery can range from modifying a joint to completely replacing a joint with a prosthetic one.

Joints Most Likely Affected by Rheumatoid Arthritis



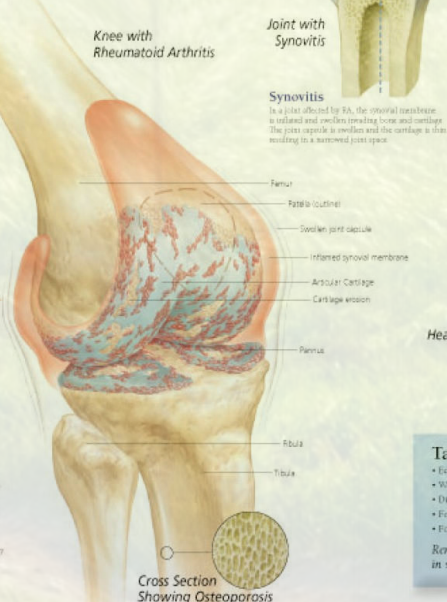
Symptoms of RA

- Pain, warmth, swelling, redness or lightness in a joint
- Joints affected in symmetrical pattern, eg. both wrists, shoulders
- Joint discomfort or stiffness, usually lasting longer than an hour after awakening or inactivity
- General soreness, stiffness
- Periodic fever/flu-like
- Loss of joint mobility
- Weakness and fatigue
- Evidence of joint or bone erosion on X-ray

Some Risk Factors for RA

- Women (between ages 20-50)
- are two to three times more likely to get RA than men
- Family history of rheumatoid arthritis

Knee with Rheumatoid Arthritis



Cross Section Showing Osteoporosis

Joint with Synovitis

Synovitis is a joint affected by RA, the synovial membrane is inflamed and swollen (swelling bone and cartilage). The joint capsule is swollen and the cartilage is thin, resulting in a narrowed joint space.

Healthy Knee

Taking Control of Your Rheumatoid Arthritis

- Educate yourself about rheumatoid arthritis
- Work with your health care provider to determine appropriate balance of exercise and rest
- Discuss potential side effects of medication with your health care provider
- Follow a nutritious and healthy diet, include plant and fish oils to help reduce inflammation
- Follow your doctor's advice on losing extra weight to help decrease strain on your joints

Remember, early detection and aggressive therapy can be important in successful management of your rheumatoid arthritis

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ARTHROPATHY

I. INFECTIVE

A. Acute:

- Bacterial: "Septic arthritis"
 - Gonococcal, Meningococcal.
 - Brucellosis, Bacillary dysentery.
 - Staph, Strept.—
- Viral:
 - IMN, HBV, HIV.

B. Chronic:

- TB.
- Syphilis.
- Lyme disease: *fever, erythematous rash, arthritis*, due to infection by a spirochaete.

II. IMMUNE

A. Acute:

- Rheumatic fever.
- Rheumatoid arthritis.
- Reactive arthropathy: *arthritis following intestinal infections*, e.g. Salmonella.
- SLE.

B. Chronic:

- All collagen diseases: RA, SLE, Scleroderma, PAN.

III. DEGENERATIVE

- Osteoarthritis.

IV. METABOLIC

A. Acute:

- Acute gouty arthritis.

B. Chronic:

- Chronic gouty arthritis.
- Hemochromatosis & amyloidosis.

V. MISCELLANEOUS

A. Acute:

- Traumatic arthritis.
- Hemarthrosis (Hemophilia).
- Henoch-Schonlein purpura.
- FMF.

B. Chronic:

- Sarcoidosis.
- Charcot's joint (Neuropathic joint).
- Congenital syndromes with arthropathy:
 - Ehlers-Danlos syndrome.
 - Marfan's syndrome.
 - Osteogenesis imperfecta.

Ehlers-Danlos Syndrome

Genetic weakness of the CT:

- **Blood:** vascular purpura due to vessel wall defect.
- **Joints:** hypermobile joints due to weak ligaments.

Marfan's Syndrome

- **Tall stature.**
- **High arched palate.**
- **Arachnodactyly.**
- **Joints:** dislocation of the joints (loose joints).
- **Eyes:** dislocation of the lens.
- **Heart:** aortic regurge, mitral regurge.

Osteogenesis Imperfecta

- **Bones:** fragile bones with repeated fractures & deformities.
- **Joints:** hypermobile joints with degeneration.
- **Eyes:** blue sclera.
- **Ears:** early deafness.
- **Stunted growth.**

Familial Mediterranean Fever

- Incidence:** in Jews & Arabs, in childhood & adolescence.
Presentation: attacks lasting for few days & recurring every few weeks.
Attack: fever, severe abdominal pain (peritonitis), chest pain (pleurisy), or (pericarditis), or effusion, & arthritis.
Complications: some cases may develop amyloidosis, Nephrotic S. & renal failure.
TTT: colchicine to prevent & cure the attack.

Septic (Suppurative) Arthritis

- Etiology:** Staph, Strept, gonococci, meningococci.
Clinical picture: Severe monoarthritis (usually of a big joint), fever.
Synovial fluid: Turbid with high number of PNLs.
TTT: Antibiotics + drainage of the synovial fluid.

Charcot's (Neuropathic) Joint

- Definition:** joints damaged by trauma due to loss of protective pain sensation.
Etiology: PN especially DM, Syringomyelia, Tabes dorsalis of syphilis.
Clinical Picture: Swollen painless joints, + abnormal range of joint movement.
TTT: ttt of the cause, + surgery in advanced cases.

OSTEOARTHRISIS

DEFINITION

- Degeneration of the joint cartilage, with proliferation of bone & osteophyte formation.

ETIOLOGY

1. Primary:

- **Idiopathic:** there is hereditary predisposition.
- **Incidence:** common in old age especially in obese females.

2. Secondary:

- Obesity, Deformity, Damage by trauma, Endocrinal diseases (e.g. acromegaly), Gout.

CLINICAL PICTURE

1. Site:

- Weight-bearing joints: knees, hips, cervical & lumbar spine.
- In primary OA: the terminal IP joints are affected.
- In secondary OA: other joints are affected according to the cause.

2. Manifestations:

- Main symptom: joint pain & stiffness which ↑ by movement & ↓ by rest.
- Spine affection: manifestations of spondylosis (refer to neurology).
- Main signs: joint crepitus, tenderness, ↓ range of movement, & late: muscle weakness.
- Herberden's nodes: these are pathognomonic & develop on the dorsal aspect of the distal IP joints.
- Bouchard's nodes: these are similar nodes on the proximal IP joints.

INVESTIGATIONS

1. Laboratory:

- Normal ESR, Normal CRP, Normal uric acid.
- Negative RF, Negative ANA.

2. X-ray:

- Narrowing of the joint space.
- Osteophytes (lipping).

TREATMENT

1. General measures:

- Weight reduction in the obese, physiotherapy.

2. Medical TTT:

- NSAIDs.

3. Surgical TTT:

- Arthrodesis, Arthroplasty.

GOUT

DEFINITION

- A disorder characterized by:

1. HYPERURICEMIA.
2. Deposition of urate crystals in:
 - Joints: leading to **gouty arthritis.**
 - Kidneys: leading to urate stones & **gouty nephropathy.**
 - Skin: leading to **gouty tophi.**

ETIOLOGY

(More common in ♂ > 40 years)

I. RENAL GOUT

(↓ excretion of UA) 90 % of the cases

1. Primary: *"The most common = 90 %"*

- It may have a genetic origin.

2. Secondary:

- Renal failure: Acute & chronic.
- Acidosis: ketoacidosis & lacticacidosis.
- Drugs & toxins:
 - Excess alcohol.
 - Diuretics: *Thiazides & frusemide.*
 - Diazoxide.
 - Pyrazinamide.

II. METABOLIC GOUT

(↑ production of UA) 10 % of the cases

1. Primary: *"The most common = 90 %"*

- It may have a genetic origin:

- Inborn error in purine metabolism.
- ↑ intake of protein – rich foods.

2. Secondary:

- MPD: e.g. CML especially with ttt (TLS).
- HA.
- Obesity: and therefore is commonly associated with HTN & DM.

CLINICAL PICTURE

I. ASYMPTOMATIC HYPERURICEMIA.

II. GOUTY ARTHRITIS:

1) Acute gouty arthritis:

- Precipitating factors of joint affection:

- Drugs & toxins (see before), Protein – rich foods, Infections, Hypouricemic drugs.

- Distribution of joint affection:

- **Number:** Monoarticular: in most of the cases, Oligoarticular: sometimes.

- **Site:** Metatarso-phalangeal joint of the big toe in 50 % of the cases.

Other affected joints: Ankles, heels, knees, wrists, fingers, elbows.

Usually spared joints: Hips & shoulders.

- Manifestations of joint affection:

- Acute onset of:
 - Severe *pain, tenderness, swelling, hotness, redness* + limitation of movement.
- Fever: may occur in cases of severe inflammation.

- Course of joint affection:

- Attacks may be repeated & the condition may pass into the chronic stage.

2) Chronic gouty arthritis:

- Joint affection:
 - Polyarticular.
 - Chronically inflamed joints & may end in secondary osteoarthritis.

III. GOUTY TOPHI:

- **Skin nodules:** due to urate deposition around joints & cartilage (ear pinna).
- **Yellowish nodules:** that may ulcerate & discharge chalky material.

IV. GOUTY NEPHROPATHY:

1. Urate stones: *leading to obstructive uropathy.*
2. Chronic interstitial nephritis.
3. Chronic renal failure.
4. Acute renal failure:
 - It is due to: acute tubular obstruction by urate crystals.
 - It occurs: especially in MPD, e.g. CML especially with ttt (TLS).

INVESTIGATIONS

1. Serum uric acid:
 - Elevated (normally: 2 – 7 mg %).
2. Investigations of the cause:
 - e.g. CRF, CML.
3. Investigations for the joints:
 - X – ray: *soft tissue swelling, bone erosions.*
 - Aspiration of synovial fluid: *urate crystals.*
4. Investigations for the kidneys:
 - Imaging: *PUT, IVP, Ultrasonography.*
 - Renal function tests: *urea, creatinine, creatinine clearance.*
5. Biopsy from the tophi.

DIFFERENTIAL DIAGNOSIS

1. Acute & chronic arthritis.
2. Acute & chronic renal failure.
3. YELLOW SKIN.

TREATMENT

A) TTT of Acute Gouty Arthritis:

1. Bed rest.
2. Excessive fluid intake.
3. Anti-inflammatory agents:
 - a. Colchicine:
 - 1 mg / 2 hours orally until symptoms disappear, or N, V & diarrhoea appear.
 - Maximum dose: 6 mg.
 - Side effects: GIT irritation, BM suppression, Hepatotoxicity.
 - b. NSAIDs:
 - Indomethacin: 50 mg tds.
 - c. Corticosteroids:
 - Indication: when there is contraindication or no response to colchicine or NSAIDs.
 - Dose: Prednisone, -1 mg / Kg / day orally.
Intra-articular corticosteroids may be given in severe cases.
4. Hypouricemic drugs: are not used in ttt since they may precipitate an acute attack.

B) TTT of chronic gouty arthritis, tophi & Nephropathy:

1. Hypouricemic drugs:

- a) Allopurinol: “↓ synthesis of UA”
 - Action: *inhibits the enzyme Xanthine oxidase essential for conversion of xanthine to UA.*
 - Dose: 300 – 800 md / day orally.
 - Side effects: dermatitis, diarrhoea, ↑ liver enzymes, ppt. acute gouty arthritis.
- b) Uricosuric drugs: “↑ UA excretion by the kidney”
 - Probenicid: 500 mg twice / day.
 - Sulfipyrazone: 200 mg twice / day.

These drugs should be given with plenty of fluids + alkalinization of urine to avoid nephrolithiasis

2. Symptomatic TTT:

- NSAIDs for chronic gout arthritis.
- Surgical removal of tophi.
- TTT of renal stones.

C) TTT of asymptomatic hyperuricemia:

- TTT with Allopurinol is indicated only in:

- Family history of gout.
- Serum uric acid: more than 11 mg %.

POLYARTERITIS NODOSA

PAN

DEFINITION

- Vasculitis involving the small & medium-sized arteries.
- The vessels form: multiple aneurysms & multiple nodules.

ETIOLOGY

- Uncommon, Unknown: probably autoimmune.
- May be related to INFECTION: especially HBV & HCV..

CLINICAL PICTURE

1. General manifestations: fever & general constitutional manifestations.
2. Renal:
 - a) Hypertension: Due to vasculitis.
 - b) GN: Nephritic syndrome, nephrotic syndrome, ARF, CRF, proteinuria.
3. Neurological: PN, subarachnoid hemorrhage, retinal hemorrhage, blindness.
4. CVS: CAD, pericarditis.
5. Pulmonary: Bronchial asthma with eosinophilia (not in classic PAN).
6. GIT: Abdominal pain, hematochezia.
7. Musculoskeletal: Arthralgia, Myalgia.
8. Skin: Raynaud's phenomenon, palpable purpura.

INVESTIGATIONS

1. CBC: leucocytosis, eosinophilia, markedly elevated ESR.
2. Urine: proteinuria, hematuria, casts.
3. ANGIOGRAPHY: **multiple microaneuroysms (diagnostic).**
4. Biopsy: renal, muscle, skin.
5. ANCA: may be positive in some cases.

TREATMENT

1. Prednisone: 1 mg / Kg / day.
2. Cyclophosphamide.

RHEUMATOID ARTHRITIS

DEFINITION

RA is a common, chronic, multisystemic, inflammatory disease producing:

- Articular involvement: Symmetrical inflammatory EROSIVE POLYARTHRITIS,
Progressive joint damage causing severe DISABILITY.
- Extra-articular involvement: in many other organs.

INCIDENCE

- RA affects about: 2 % of the population.
- Female to male ratio is: 3 to 1.

ETIOLOGY

- It is still UNKNOWN.

- Factors suggested are:

1. Autoimmune:

- Autoantibodies are found, e.g. RF, which is an autoantibody against the patient's IgG.
- Association with other autoimmune diseases such as: PA & Hashimoto's thyroiditis.

2. Genetic:

- RA runs in families.
- RA is commonly associated with tissue type: HLA – DR4.

3. Infectious:

- Viruses: *EBV*.
- Bacteria: *Streptococci*.

PATHOLOGY

- RA is disease of the SYNOVIUM, there are 2 main pathological features:

1. Inflammation: The synovium shows signs of chronic inflammation.
2. Proliferation: The synovium then proliferates with an outgrowth over the surface of the cartilage & forms a tumour-like mass called Pannus.
This Pannus will destroy the intra-articular & peri-articular structures causing joint deformities & dysfunction.

- SC nodules occur having a central area of necrosis surrounded by fibrosis.

CLINICAL PICTURE

I. ARTICULAR MANIFESTATIONS

Symptoms

- Joint pain.
- MORNING STIFFNESS.
- Disability

Signs

- Swelling, hotness, redness, tenderness, + limitation of movement.

Affected joints

- Most commonly: small joints of hands, wrists, knees, ankles, feet.
- Less commonly: elbows, shoulders, hips.
- Least commonly: temporomandibular, sternoclavicular.

Spared joints

- Distal interphalangeal (DIP), Sacro-iliac.

Deformities

- Fusiform finger: swelling of the PIP is one of the most common early signs.
- Ulnar deviation: of the fingers at the MCP joints.
- Boutonniere deformity: flexion of the PIP & hyperextension of the DIP joints.
- Swan-neck deformity: hyperextension of the PIP & flexion of the DIP joints.
- Z-deformity of Thumb: flexion of MCP & hyperextension of IP joint.

II. EXTRA-ARTICULAR MANIFESTATIONS

1. General: fever & general constitutional manifestations.

2. Skin:

- SC nodules (on pressure sites & extensor tendons).
- Palmar erythema.
- Vasculitic lesions.

3. Eyes: Sjogren's syndrome (dry eyes, dry mouth), Scleritis.

4. Cardiac:

- Pericardium: pericarditis; pericardial effusion.
- Coronary vasculitis.

5. Pulmonary:

a) **Pleura:** pleurisy, pleural effusion.

b) **Lung:**

- IPF.
- Pulmonary nodules.
- Caplan's syndrome (RA, pulmonary nodules, pneumoconiosis).

6. Renal:

- Amyloidosis: nephrotic syndrome & CRF.
- Analgesic nephropathy:
 - NSAIDs: interstitial nephritis.
 - Gold & penicillamine: proteinuria & nephrotic syndrome.

7. Hematological:

- ANEMIA why ??

8. Neurological:

- PN
- Carpal tunnel syndrome (the most common).
- Atlanto-axial subluxation (the most serious) → cervical cord compression.

9. OTHERS:

- Soft tissues surrounding joints: bursitis, tenosynovitis.
- Muscles: secondary myopathy
- VASCULITIS.

VARIANTS OF RA

1. Felty's syndrome:

Chronic RA plus:

- Splenomegaly & may be hepatomegaly & LN.
- Pancytopenia.
- Hyperpigmentation & leg ulcers.

2. Sjogren's syndrome:

Chronic RA plus:

- Dry eyes: Keratoconjunctivitis sicca.
- Dry mouth: Xerostomia.

3. Caplan's syndrome:

Chronic RA plus:

- Pulmonary nodules.
- Pneumoconiosis.

INVESTIGATIONS

1. X-ray of the joints:

- Mouse-bite erosion on the surface of the affected bone.
- Porosis of the periarticular bone.
- Loss of the joint space.
- Characteristic deformities.

2. CBC:

- Anemia.
- ESR & CRP: ↑ in proportion to activity.

3. Aspiration of synovial fluid:

- Positive RF.
- ↑ protein, ↓ glucose, ↓ complement.

4. Serology:

- Rheumatoid factor:
 - IgM autoantibody: directed against the IgG of the patient.
 - Positive in: about 85 % of the cases of RA.
 - May be positive in: *SLE, Sarcoidosis, SBE, TB, in 5 % of normal persons.*
- Antinuclear antibodies: are positive in 30 % of the cases, non-specific.

TREATMENT

I. General measures:

- Reassurance.
- Rest: *bed rest during activity, joint rest using splints.*
- Physiotherapy.

II. Medical TTT:

1. Anti-inflammatory drugs:

a) NSAIDs:

- Aspirin: 6 gm / day.
- Indomethacin: 50 mg tds.

b) Corticosteroids:

- Prednisone: 7.5 mg / day.
- Larger doses are used only in: *extra-articular manifestations: e.g. pericarditis.*
- Side effects include:
 - *Iatrogenic Cushing's syndrome.*
 - *Peptic ulcer.*
 - *Salt & water retention & precipitation of HF.*
 - *Hypertension & Diabetes.*
 - *Osteoporosis.*
 - *Delayed wound healing.*
 - *Increased incidence of infection: e.g. TB.*

2. Disease – Modifying drugs:

○ Action:

They slow the natural course of the disease, probably through immune mechanisms.

○ Indications:

- Progressive disease,
- Extra-articular disease,
- No response to NSAIDs.

○ Drugs:

Drug	Dose	Side effects
<i>Penicillamine</i>	250 mg / day orally	Rash, proteinuria, NS, ¹ BMS ²
<i>Gold</i>	50 mg / week IM	Rash, proteinuria, NS, BMS
<i>Antimalarial drugs</i> Hydroxychloroquine Chloroquine	400 mg / day orally 250 mg / day orally	GIT irritation BMS Corneal opacity, retinopathy
<i>Sulpasalazine</i>	1 gm twice / day orally	GIT irritation, hepatitis
<i>Methotrexate</i>	7.5 – 15 mg / week orally	GIT irritation, hepatotoxicity, BMS

3. Immuno-suppressive drugs:

- Used in severe resistant cases:

- Azathioprine.
- Cyclophosphamide.
- Cyclosporine.

III. Other measures:

1. Intra-articular corticosteroids.
2. Surgery for the deformities: *arthroplasty, arthrodesis.*

¹ NS = Nephrotic syndrome

² BMS = Bone marrow suppression

Diagnosis of RA (American Rheumatoid Association)

RA is diagnosed by the presence of 4 or more of the following criteria:

1. Morning stiffness: at least 1 hour.
2. Soft tissue swelling: of 3 or more joint areas.
3. Swelling of: PIP, MCP, or wrist joint.
4. Symmetric swelling of joint areas.
5. SC nodules.
6. Positive RF.
7. X-ray: erosions and / or periarticular porosis in hands or wrist.

SERONEGATIVE ARTHRITIS

DEFINITION

They are diseases characterized by:

- Involvement of the sacro-iliac joints.
- Peripheral inflammatory arthropathy.
- ABSENCE OF RHEUMATOID FACTOR.

TYPES

1. Ankylosing spondylitis

- Incidence: young adults, more in males.
- Clinical Picture:
 - o Back pain: affects the sacroiliac joints & the spine causing progressive stiffness.
 - o Pain: in the buttocks radiating down to the back of both legs.
 - o Peripheral polyarthritis may occur.
 - o Iritis & Aortic regurge may be present.
- Investigations:
 - o X-ray spine: Bamboo spine: *calcification of the spinal ligaments + fusion of the vertebrae.*
 - o ESR & CRP: are often elevated.
- Treatment:
 - o NSAIDs.
 - o Sulphasalazine.

2. Reiter's disease

- It consists of a triad: *seronegative arthritis, conjunctivitis, non-specific urethritis.*
- It can follow: *GIT infection with Shigella or Salmonella, OR venereal infection.*
- TTT: NSAIDs.

3. Psoriatic arthritis

- A **seronegative arthritis** occurring in patients with psoriasis
- A polyarthritis similar to RA but it involves the **DIP joint**
- TTT: NSAIDs, immunosuppressive drugs.

4. Juvenile chronic arthritis

"Still's disease"

- **Seronegative arthritis.**
- ACUTE onset of: fever, rash, LN, hepatosplenomegaly.
- TTT: NSAIDs.

5. Behcet's disease

- **RECURRENT ORAL ULCERS** (the most important feature).
- Genital ulcers.
- Uveitis.
- Vasculitis.
- **Seronegative arthritis.**
- Meningo-encephalitis.
- TTT: **C**orticosteroids, **C**olchicines, **C**yclosporine.

SYSTEMIC LUPUS ERYTHEMATOSUS

SLE

DEFINITION

- It is a **CHRONIC INFLAMMATORY, MULTISYSTEM disease**:

- Arthralgia & Skin lesions: the **most common** features.
- Cerebral & Renal affection: the **most serious** problems.

ETIOLOGY

"UNKNOWN"

- Many factors may play a role:

1. AUTOIMMUNE:

- Autoantibodies are found, e.g. ANA & others.
- Association with other AI¹ diseases, e.g. Hashimoto's thyroiditis & others.
- Presence of circulating IC² → inflammation & tissue damage.
- Responds to: corticosteroids & immunosuppressive drugs.

2. Genetic:

- SLE runs in families, i.e. may be positive FH.
- SLE is commonly associated with: HLA – DR3.

3. Environmental: (They exacerbate existing SLE & may also trigger the initial onset)

- A) **Physical**: Sunlight & ultraviolet light.
- B) **Infections**: Viruses & bacteria.
- C) **Hormones**: CCPs, estrogens, pregnancy exacerbates SLE.

4. Drug – induced lupus: **"Usually reversible"**

- Drug – induced lupus mimics SLE, however symptoms usually disappear once the drug is stopped.
- Drugs include: *Hydralazine, procainamide, INH.*

¹ AI = Auto immune

² IC = Immune complexes

PATHOLOGY

"MULTISYSTEM inflammation & tissue damage"

1. Vasculitis: widespread vasculitis affecting the capillaries, arterioles, venules.
2. Synovitis: inflammation of the synovium, BUT with no erosion.
3. Polyserositis: pleura, pericardium, peritoneum.
4. OTHERS: GN, cerebritis, carditis. pneumonitis.

INCIDENCE

- Sex: ♀ / ♂ incidence is 10 / 1
- Age: 15 – 40 years.
- Course: Remissions & relapses.

CLINICAL PICTURE

1. General:

- Fever (low grade).
- General constitutional manifestations, e.g. *fatigue, malaise, anorexia*.

2. Musculoskeletal:

- Arthralgia: the most common (90 %).
- Arthritis: less common (30 %).
- Myalgia, myositis, myopathy.

3. Skin:

- Alopecia.
- Photosensitivity.
- Malar rash: erythema in the butterfly area.
- Oral ulcers.
- Raynaud's phenomenon & vasculitic lesions.
- Vitiligo.
- Discoid lupus: butterfly rash with scaling, scarring, hyper or hypopigmentation.

4. Cardiovascular:

- Pericardial: pericarditis, effusion.
- Myocardial: myocarditis, cardiomyopathy.
- Endocardial: non-bacterial endocarditis (Libman-sacks endocarditis).
- Blood vessels: CAD, Raynaud's ph., thrombosis (venous, arterial).
- HYPERTENSION: why ???

5. Respiratory:

- Pleural: pleurisy, effusion.
- Pulmonary:
 - IPF.
 - Pneumonitis.
 - Pulmonary hypertension & cor pulmonale.
 - Pulmonary embolism: from DVT.
 - Pulmonary hemorrhage.

6. Neurological:

- Psychiatric: depression, psychosis (also due to steroid ttt).
- CNS:
 - A) CEREBRAL: Lupus cerebritis
Seizures, Stroke, headache, aseptic meningitis.
 - B) Spinal: Transverse myelitis
- PNS: Peripheral neuropathy.

7. GIT:

- Abdominal pain: due to peritonitis, mesenteric vasculitis, & rarely pancreatitis.
- Gastroenteritis: rare.

8. Ocular:

- Conjunctivitis, scleritis.
- Retinal vasculitis.

9. Renal:

- Pathology:

- GN: different types, especially membranous GN.
- Interstitial nephritis.

- Clinical presentation:

- Nephrotic syndrome.
- Nephritic syndrome.
- CRF.
- ARF.
- Urinary abnormalities: proteinuria, hematuria.

10. Hematological:

- Cytopenias:

- Anemia: why ???
- Leukopenia.
- Thrombocytopenia.
- PANCYTOPENIA.

- Circulating anticoagulants:

- Antiphospholipid antibodies: lupus anticoagulant & anticardiolipin Abs,
present with recurrent thrombosis & abortion.
- Anti – factor VIII antibodies:
present with Hemophilia – like picture.

- Splenomegaly.

- Lymphadenopathy.

- Impaired immunity: *due to leucopenia & hypocomplementemia.*

- Important question: "Self – assessment"

"What is meant by Antiphospholipid syndrome " ??

INVESTIGATIONS

1. Serology:

a) Specific:

- Anti – ds DNA antibodies.
- Anti – Sm (Smith) antibodies.

a) Sensitive:

- Antinuclear antibodies (ANA): positive in 99 % of the cases.

a) Others:

- LE cells.
- RF: may be positive in 15 % of the cases.
- Antiphospholipid antibodies: may be positive.
- Coomb's test: may be positive.
- HYPOCOMPLEMENTEMIA & HYPERGAMMAGLOBULINEMIA.

2. CBC:

- Cytopenias:

- Anemia.
- Leukopenia.
- Thrombocytopenia.
- PANCYTOPENIA.

- ESR: *markedly elevated.*

3. Investigations for the kidney:

a) Urinalysis:

- Proteinuria, hematuria, casts

b) Renal function tests:

- May be impaired.

a) Renal biopsy:

- GN: different types, especially membranous GN.
- Interstitial nephritis.

Diagnosis of SLE

SLE is diagnosed by the presence of 4 or more of the following criteria:

1. Malar rash.
2. Photosensitivity.
3. Oral ulcers.
4. Discoid lupus.
5. Arthritis.
6. Serositis.
7. Renal manifestations: *persistent proteinuria, casts.*
8. Neurological manifestations: *psychosis, seizures.*
9. Hematological: *hemolytic anemia, leukopenia.*
10. **SEROLOGY:**
 - *Anti – ds DNA antibodies.*
 - *Anti – Sm (Smith) antibodies.*
 - *Antinuclear antibodies (ANA).*

TREATMENT

I. General measures:

1. Avoid exposure to sunlight & ultraviolet light.
2. Avoid drugs that induce SLE.
3. Symptomatic treatment: e.g. ttt of renal failure.

II. Medical TTT:

1. NSAIDs:

Indications: fever, arthritis, serositis.

Drugs: Refer to RA.

2. ANTI – MALARIAL DRUGS:

Indications: skin lesions & cases not responding to NSAIDs.

Drugs: Refer to RA.

3. CORTICOSTEROIDS:

Indications:

- Severe cases not responding to the previous drugs.
- Major organ SLE, e.g. *nephritis, cerebritis, carditis, pneumonitis*.

Drugs:

- Prednisone: 1 mg / Kg / day orally.
- Pulse therapy: methyl prednisolone 1000 mg / day for 4 days in severe cases, followed by the usual oral dose.

4. IMMUNOSUPPRESSIVE DRUGS:

Indications:

- Severe cases not responding to corticosteroids.
- Major organ SLE, e.g. *nephritis, cerebritis, carditis, pneumonitis*.

Drugs:

- Azathioprine, Cyclophosphamide.

III. Plasmapheresis:

Indications: severe cases of *lupus nephritis* or *cerebritis*.

SARCOIDOSIS

- A multisystem GRANULOMATOUS disorder of unknown etiology presenting with:

- Bilateral hilar LN.
- Pulmonary infiltrations & IPF.
- Generalized LN (also epitrochlear).
- HSM, Cardiomyopathy, Arthralgias.
- Skin lesions: e.g. erythema nodosum.
- Eye lesions: bilateral iridocyclitis.

- Investigations:

1. Chest X ray: Bilateral hilar LN, pulmonary infiltrations, IPF.
2. Blood: elevated serum Ca.
3. LN biopsy: Tubercles formed of epithelioid cells, giant cells, lymphocytes, fibrosis,
BUT: without caseation.
4. Kveim test: positive.
5. Serum ACE: elevated.

- Treatment:

- Corticosteroids: prednisolone 1 mg / Kg / day.

SYSTEMIC SCLEROSIS

SCLERODERMA

DEFINITION

- It is an INFLAMMATORY, MULTISYSTEM disorder with:
 - Cutaneous manifestations as the most common feature.
 - Extra-cutaneous manifestations also occur.

ETIOLOGY

- It is still UNKNOWN.
- Factors suggested are:
 - Autoimmune:
 - Autoantibodies are found, e.g. Anti-scleroderma 70, and other autoantibodies.
 - Association with other autoimmune diseases such as: PA & Hashimoto's thyroiditis.

PATHOLOGY

- There is: excessive scarring (fibrosis) & vascular obliteration of the small arteries.

INCIDENCE

- Sex: Female to male ratio is: 3 to 1.
- Age: 20 – 50 years.

CLINICAL PICTURE

I. CUTANEOUS MANIFESTATIONS

- The skin is: **TIGHT**, *adherent to the underlying structures.*
- Later on: *pigmentation, ulceration, calcification.*

1. Limited cutaneous scleroderma:

- Peripheral skin affection: *hands, feet, face.*
- Fingers: *shiny, limited mobility.*
- Face: *mask face, fish mouth.*

2. Diffuse cutaneous scleroderma:

Diffuse skin affection: *trunk, hands, feet, face.*

II. EXTRA-CUTANEOUS MANIFESTATIONS

1. GIT:

- *Mouth:* fish mouth.
- *Oesophagus:* loss of peristalsis, dilatation, dysphagia, **GORD**.
- *Small intestine:* malabsorption.
- *Large intestine:* constipation.

2. CVS:

- Pericardial: *pericarditis, effusion..*
- Myocardial: *restrictive cardiomyopathy.*
- Endocardial: *MR, TR*
- Blood vessels: **RAYNAUD'S PHENOMENON** (very common).
- Hypertension: *due to renal vasculitis.*

3. PULMONARY:

- Chest wall: *hard skin leading to: Restrictive hypoventilation.*
- Pleura: *pleurisy.*
- Lung: *IPF, aspiration pneumonia (due to GORD).*
- Blood vessels: *pulmonary hypertension & cor pulmonale.*

4. RENAL:

- Malignant hypertension: *due to obliterative endarteritis of the renal vessels.*
- CRF.

5. MUSCULOSKELETAL:

- *Arthralgia:* the most common.
- *Arthritis:* less common.
- *Myalgia,* *myopathy.*

INVESTIGATIONS

1. Serology:

- Anti – Scleroderma 70 antibodies: "the most specific"
- ANA, RF, LE cells: "not specific"

2. CBC:

- Anemia.
- Markedly elevated ESR.

3. Imaging:

- Ba swallow: *Dilated oesophagus.*
- Chest X-ray: *IPF.*

TREATMENT

1. Specific ttt:

- Corticosteroids: *Prednisone, 1 mg / Kg / day.*
- Immunosuppressives: *Cyclophosphamide.*
- Antifibrotics: *Penicillamine.*

2. Symptomatic ttt:

- e.g. For Raynaud's phenomenon: *Calcium channel blockers, alpha blockers.*

DERMATOMYOSITIS & POLYMYOSITIS

1. Skin manifestations:

- Erythematous rash.

2. Muscle manifestations:

- Muscle pain & tenderness.
- Features of myopathy.

3. Malignancy:

- Present in 18 % of the cases: e.g. bronchial carcinoma.

OVERLAP SYNDROME

- Patients with features of more than one collagen disease.

MCTD

- Patients with features of: *SLE, Scleroderma, Polymyositis.*

AMYLOIDOSIS

DEFINITION

- Abnormal deposition of amyloid proteins in the tissues.

TYPES

1. PRIMARY: "Hereditary"
 - Heart: Cardiomyopathy.
 - GIT: Macroglossia, Malabsorption.
 - Neurological: PN, Carpal tunnel syndrome.
 - Joints: Arthritis.
2. SECONDARY:
 - It is due to: Chronic suppurative disease (SLS), TB, RA, FMF.
 - It presents with: HSM, Nephrotic syndrome.

INVESTIGATIONS

1. Investigations of the cause & the complications.
2. Rectal biopsy: amyloid material by "Congo red stain".

TREATMENT

- Treatment of the cause & the complications.

MULTIPLE MYELOMA

- Malignant disorder of plasma cells in OLD AGE presenting with:
 1. Skeletal: Bony pains, pathological fracture, skull osteolytic lesions, $\uparrow$ Ca.
 2. Renal: RENAL FAILURE & Bence-Jones proteinuria.
 3. Neurological: Focal spinal cord compression.
 4. Blood: ANEMIA (BM infiltration, BM inhibition, uremia).
 5. Bleeding: coating of platelets & clotting factors by abnormal proteins.
 6. Hyperviscosity.
- Investigations:
 1. Skeletal X-ray: Multiple osteolytic lesions in the bones.
 2. Renal: Impaired renal functions, Bence-Jones proteinuria.
 3. Blood: Anemia, elevated ESR, elevates serum Ca.
 4. BM exam: Full of plasma cells.
 5. PLASMA PROTEIN ELECTROPHORESIS: Monoclonal hypergammaglobulinemia.
- Treatment:
 - Chemotherapy, Radiotherapy, BMT.

Infections



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TYPHOID FEVER

ETIOLOGY

1. Causative organism:

- TYPHOID: *Salmonella Typhi.*
- PARATYPHOID: *Salmonella Paratyphi A, B, C.*

2. Source of infection:

- Carrier: *fecal carrier, urinary carrier.*
- Patient.

3. Mode of infection:

- Fecal – oral transmission.

4. Incubation period:

- 1 – 3 weeks.

CLINICAL PICTURE

- Age: It occurs most commonly in YOUNG AGE (children & young adults).
- Presentation: TYPICAL UNTREATED ATTACK passes through 4 STAGES (4 weeks):

I. FIRST WEEK

- **General:** *Toxic look & prostration.*
- **Fever:** *temp. ↑ in a STEP-LADDER pattern to 39-40 ° C by the end of first week.*
- **Headache:** *severe, common.*
- **Abdomen:** *abdominal pain, abdominal distension, constipation, rarely diarrhea.*
- **Spleen:** *palpable by the end of the first week, soft, tender.*
- **PULSE:** *relative bradycardia (Tachycardia not matching with the level of the fever).*

II. SECOND WEEK

- **General:** Toxic look & prostration become more severe.
- **Fever:** becomes HIGH & CONTINUOUS.
- **Headache:** *usually becomes less severe & may disappear.*
- **Abdomen:** *abdominal pain, abdominal distension, constipation, rarely diarrhoea.*
- **Spleen:** *more enlargement.*
- **PULSE:** Tachycardia.

III. THIRD WEEK

"Dangerous week"

- **Improvement** occurs: *temperature drops, general & abdominal manifestations improve,*
OR
- **Complications** occur.

IV. FOURTH WEEK

- **Convalescence** begins, **BUT:**
- **Relapses** may occur.

COMPLICATIONS

1. Relapses.

2. GIT:

- Intestinal hemorrhage:
 - **Mild:** *may be unnoticed.*
 - **Severe:** *hematochezia, melena, hypotension, tachycardia, leucocytosis, reticulocytosis.*
- Intestinal perforation:
 - *With subsequent peritonitis.*

3. Respiratory:

- Bronchitis.
- Pneumonia.

4. CVS:

- Toxic myocarditis.

5. CNS:

- Meningitis.
- Encephalitis: **C**onfusion, **C**oma, **C**onvulsions "TYPHOID STATE".

6. Urinary system:

- Cystitis.
- Pyelonephritis.
- Glomerulonephritis: GN.
- Proteinuria.
- Oliguria: due to ARF.

7. Musculoskeletal system:

- Osteomyelitis.
- Arthritis.

8. Hematological:

- Anemia Why ??

9. Chronic salmonellosis.

10. Complications of therapy:

- e.g. BM failure with the use of chloramphenicol.

CLINICAL VARIANTS

- | | |
|---------------------|---|
| 1. Mild form: | <i>abortive.</i> |
| 2. Ambulatory form: | <i>the patient does not feel the disease in the first week.</i> |
| 1. Afebrile form: | <i>absence of fever.</i> |
| 2. Grave form: | <i>with severe nervous symptoms.</i> |
| 3. Sudoral form: | <i>with excessive sweating, resembling malaria.</i> |
| 4. Localized forms: | <i>pneumotyphoid, pleurotyphoid, meningotyphoid.</i> |

CLINICAL PRESENTATIONS OF SALMONELLA INFECTIONS

- Refer to notes of "GIT revision".

INVESTIGATIONS

1. CBC:

WBCs

- Leukopenia: with relative lymphocytosis.
- Leukocytosis: in cases of intestinal hemorrhage & intestinal perforation.

RBCs

- Anemia.

2. Culture:

- Blood culture: positive in the first 2 weeks ONLY.
- Stool culture: positive from the second week to the fourth week.
- Urine culture: positive from the second week to the fourth week.

3. Serology: “Widal Test = SALMONELLA AGGLUTINATION TEST”

- It measures the titres of ANTIBODIES that cause AGGLUTINATION of SALMONELLA ANTIGENS.
- Antigens are: *H (Flagellar), O (Somatic), Vi (Capsular).*

DIFFERENTIAL DIAGNOSIS

1. Fever with splenomegaly.
2. Fever of unknown origin: FUO.

TREATMENT

I. Prophylactic:

1. Hygienic measures:

- Food sanitation.
- Isolation of patients.
- TTT of **C**arriers: **C**iprofloxacin, **C**hloramphenicol, **C**holecystectomy.

2. Immunoprophylaxis:

- Vaccine.

II. Curative:

1. General care:

- Rest in bed.
- Light nutrient diet.

2. Symtomatic ttt:

- For fever & headache: antipyretics, analgesics.
- For constipation: enema.
- For diarrhea: loperamide.

3. Specific ttt:

a) Ciprofloxacin: “ Quinolones = The drug of choice ”

- 750 mg / 12 hours for 10 days.

b) Co-trimoxazole:

- 2 tablets twice daily for 2 weeks.

c) Chloramphenicol: “ is better avoided ”

- 50 mg / Kg / day orally in 6 hourly doses until fever subsides, THEN:
- Half the dose to complete 2 weeks.

d) Ampicillin:

- 2 gm / 6 hours for 2 weeks.

4. TTT of complications:

- For intestinal hemorrhage: *blood transfusion & anti-shock measures.*
- For intestinal perforation: *surgical ttt.*

NB

Corticosteroids may be given in severe cases: e.g. shock under cover of Antibiotics.

BRUCELLOSIS

ETIOLOGY

1. Causative organism:

- Brucella: gram negative cocco-bacilli.

2. Source of infection:

- Brucella melitensis: in goats.
- Brucella abortus: in cows.
- Brucella suis: in pigs.
- Brucella canis: in dogs.

3. Mode of infection:

- Drinking raw milk of infected animals.
- Contamination of skin during dealing with infected animals.
- Laboratory infection.

4. Incubation period:

- 1 – 3 weeks.

CLINICAL PICTURE

1. Onset: acute or gradual, with **M**alaise or **M**yalgia.

2. FEVER: " **UNDULANT** "

- It reaches: 39-40°C.
- Waves of PYREXIA lasting for 1 – 3 weeks, followed by APYREXIA for 10 days, then relapse occurs & so on.

3. CONSTITUTIONAL SYMPTOMS:

- Profuse sweating.
- Headache, and fatigue.
- Pain: bony pains, arthralgia, myalgia.

4. GIT:

- Anorexia, Nausea, Vomiting, Constipation.

5. Generalized LN enlargement:

- In 50 % of the cases.

6. Hepatosplenomegaly.

COMPLICATIONS

1. CNS:	<i>meningitis,</i>	<i>encephalitis,</i>	<i>PN.</i>
2. Respiratory:	<i>bronchitis,</i>	<i>pneumonia.</i>	
3. Musculoskeletal:	<i>osteomyelitis,</i>	<i>arthritis.</i>	
4. Genital:	<i>orchitis,</i>	<i>mastitis,</i>	<i>abortion.</i>
5. Blood:	<i>anemia.</i>		

CLINICAL VARIANTS

1. ACUTE BRUCELLOSIS:

- Undulant: *previously described.*
- Intermittent: *normal morning temp., high evening temp. with rigors & sweats.*
- Continuous: *persistent fever for 1 – 3 months.*

2. CHRONIC BRUCELLOSIS:

- Prolonged course: *with minimal fever for several months or years.*
- Toxic symptoms predominate: *headache, fatigue, myalgias, anorexia.*
- HSM, LN: *may occur.*

3. LOCALIZED BRUCELOSIS:

essentially due to Metastatic septicemia:
Osteomyelitis, Arthritis, Splenic abscesses, Bronchopneumonia, Orchitis.

4. MILD AMBULATORY TYPE:

in endemic areas.

5. MALIGNANT TYPE:

marked toxicity with severe complications.

DIFFERENTIAL DIAGNOSIS

1. Fever with splenomegaly.
2. Fever with LN.
3. Fever of unknown origin: FUO.
4. Rheumatic fever.
5. Relapsing fever.

INVESTIGATIONS

1. CBC:

WBCs

- Leukopenia: with relative lymphocytosis.
- Monocytosis.

RBCs

- Anemia.

2. Culture:

- Blood culture: positive.

3. Serology:

- a) Brucella Agglutination Test: measures IgM (Acute Brucellosis):

- It is positive from the second week.

- b) ELISA Test:

- It measures: BOTH IgM (Acute Brucellosis) & IgG (Chronic Brucellosis).

TREATMENT

1. General measures:

- Bed rest.
- Light diet.
- Analgesics & Antipyretics.

2. Specific measures:

First regimen:

- Doxycycline: 200 mg / day orally for 6 weeks, PLUS:
- Rifampicin: 600 – 900 mg / day orally for 6 weeks.

Second regimen:

- Tetracycline: 500 mg / 6 hours orally for 6 weeks, PLUS:
- Streptomycin: 1 gm / day IM for 2 weeks.

3. TTT of complications.

MALARIA

ETIOLOGY

1. Causative organism:

- Protozoa: Plasmodium.
- 4 types: *Plasmodium vivax*, *ovale*, *malariae*, *falciparum*.

2. Source of infection:

- Patients.

3. Mode of infection:

- Bite of female anopheles mosquito.

4. Incubation period:

- 1 – 2 weeks.

CLINICAL PICTURE

I. Benign tertian malaria (P.Vivax, P. Ovale):

- The attack occurs every 48 hours & passes into 3 stages:

1. Cold stage:

- It lasts for: 1 hour.
- It is associated with: *acute onset of rise of temperature to 39-40°C.*
- It is associated with: *acute onset of sense of coldness & rigors.*
- It is associated with: *nausea, vomiting.*

2. Hot stage:

- It lasts for: 8 hours.
- It is associated with: *persistent high temperature, sense of hotness.*
- It is associated with: *relief from sense of coldness.*
- It is associated with: *nausea, vomiting.*

3. Sweating stage:

- It lasts for: 2 – 3 hours.
- It is associated with: *rapid fall of temperature, excessive sweating.*
- It is associated with: *relief from symptoms.*
- It is associated with: *vomiting stops.*

NB The spleen:

- It is soft, tender, may reach a HUGE size.

II. Quartan malaria (*P. Malariae*):

- Clinical manifestations are similar to benign tertian malaria, **BUT**:
- The attacks occur every 72 hours.

III. Malignant malaria (*P. Falciparum*):

1. Tertian type: “ Uncomplicated ”

- Clinical manifestations are similar to benign tertian malaria, **BUT**:
- Manifestations are more severe.

2. Pernicious type: “ Complicated ”

- a) Cerebral malaria: severe headache, drowsiness, coma, death.
- b) GI malaria: severe vomiting, diarrhoea, dysentery.
- c) Algid malaria: abdominal pain, shock, hypothermia.

3. Black water fever:

- A complication of malignant malaria in patients taking antimalarial ttt especially quinine.
- Intravascular hemolysis occurs leading to: *fever, rigors, jaundice, hemoglobinuria, ARF.*

INVESTIGATIONS

- 1. Blood film: *to demonstrate the parasite.*
- 2. Bone marrow aspirate: *to demonstrate the parasite.*
- 3. Blood picture: *features of hemolytic anemia.*
- 4. Therapeutic test: *fever responds to antimalarial ttt e.g. chloroquine.*

DIFFERENTIAL DIAGNOSIS

- 1. Fever with rigors.
- 2. Fever with splenomegaly.
- 3. Fever with jaundice.
- 4. FUO.

TREATMENT

I. Prophylactic:

- Anti-mosquito measures.
- Chemoprophylaxis: “Suppressive doses of antimalarial drugs”
Chloroquine: 500-mg / week, continued for 4 weeks after-leaving the Endemic area.
Mefloquine: 250 mg / week.

II. Curative:

a) Schizonticidal drugs: “destroy the erythrocytic forms”

1. Chloroquine:

- *Dose:* 4 tablets (tab = 250 mg), then another 2 tablets after 12 hours, then 2 tablets / day for 2 successive days.
- *Side effects:* refer to RA.

2. In chloroquine-resistant cases:

- Quinine: 650 mg tds for 1 week.
- Tetracycline: 250 mg / 6 hours for 1 week.
- Fansidar.
- Mefloquine.
- Paludrine.
- Daraprim.

b) True causal prophylactics: “destroy the exo-erythrocytic cycle”

- Used in cases of benign tertian malaria to prevent relapses.
- Primaquine: 20 mg / day for 2 weeks.

III. TTT of Complications: “Black water fever”

- *Stoppage of Quinine, Corticosteroids, Blood transfusion, Dialysis.*

INFECTIOUS MONONUCLEOSIS

ETIOLOGY

1. Causative organism:

- EBV.

2. Mode of infection:

- Droplet infection.

3. Incubation period:

1 – 2 weeks.

CLINICAL PICTURE

1. **FEVER:** with nonspecific rash.
2. **SORE THROAT.**
3. **LYMPHADENOPATHY:** cervical LN are mostly affected, but generalized LN may occur.
4. Hepatosplenomegaly.
5. Maculopapular Skin rash: characteristically produced by administration of AMPICILLIN.

Complications of EBV

I. Infections:

- Hepatitis.
- Meningitis.
- Encephalitis.
- Guillain Barre syndrome.
- Cranial nerve palsies, especially Bell's palsy.
- Pericarditis, Myocarditis.

II. Malignancy:

- Nasopharyngeal carcinoma.
- Non Hodgkin's lymphoma.
- Burkitt's lymphoma.

III. Blood:

- AIHA.
- Aplastic anemia.

INVESTIGATIONS

1. CBC: lymphocytosis, monocytosis, atypical cells, AIHA, Aplastic anemia.
2. Serology: **antibodies** against EBV.
3. Paul-Bunnell test & Monospot test: **antibodies** which agglutinate sheep's RBCs.
4. Bone marrow examination: *to exclude leukemias.*
5. LN biopsy: *to exclude lymphomas.*
6. Throat swab: *to exclude other causes of sore throat.*

DIFFERENTIAL DIAGNOSIS

1. Fever with sore throat.
2. Fever with LN.
3. Fever with splenomegaly.
4. FUO.

TREATMENT

1. Antipyretics.
2. Antibiotics for secondary infection.
3. Corticosteroids for AIHA.

CHOLERA

ETIOLOGY

1. **Causative organism:**
 - Vibrio Cholera: *classical & Eltor.*
2. **Source of infection:**
 - Carrier
 - Patient.
3. **Mode of infection:**
 - Fecal – oral transmission.
4. **Incubation period:**
 - 1 – 5 days.

CLINICAL PICTURE

- The disease usually lasts for 3 – 5 days, THEN: ends either by **recovery** or **death**.
- The disease may pass through **3 stages:**

1. Stage of evacuation:

- Acute severe watery **diarrhea**: *effortless, painless diarrhea.*
- **Vomiting**: of large volume.
- Signs of **dehydration**:
 - *Dry tongue.*
 - *Dry skin (inelastic skin).*
 - *Sunken eyes.*
 - *Rapid weak pulse, -low BP.*
 - *Marked loss of weight.*

2. Stage of collapse:

- **Dehydration**: become very marked.
- **Death**: due to hypovolemic shock or due to ARF.

3. Stage of reaction:

- If there is rapid fluid replacement, rapid improvement will occur.
- Dehydration: is corrected.
- Diarrhea & vomiting will stop.

COMPLICATIONS

- Hypovolemic shock.
- ARF.
- Hypoglycemia.
- Hypokalemia.

INVESTIGATIONS

- Stool culture: on TCBS agar to detect the organism.

DIFFERENTIAL DIAGNOSIS

- Causes of acute watery diarrhea.

TREATMENT

I. Prophylaxis:

1. Vaccination.
2. Tetracyclines: 250 mg / 6 hours for 3 days.

II. Curative:

1. Fluid replacement.
2. Tetracyclines: 250 mg / 6 hours.
3. Antidiarrheal agents: e.g. loperamide.

AIDS

ETIOLOGY

- Infection with: Human Retrovirus HIV.

MODE OF TRANSMISSION

1. Sexual intercourse: *especially among Homosexuals.*
2. Mother to child.
3. Contaminated blood.
4. Contaminated needles.

PATHOGENESIS

- The virus infects the T Lymphocytes leading to their progressive depletion.
- The virus can also inhibit the B Lymphocytes.
- The result is: BOTH CELLULAR & HUMORAL IMMUNODEFICIENCY.
- When the T Lymphocytes fall below *200 cells / cmm*, the patient becomes at HIGH RISK to develop OPPORTUNISTIC DISEASES.

CLINICAL PICTURE

1. ACUTE HIV SYNDROME

- Features: fever, rigors, arthralgias, myalgias, maculopapular rash.
- Duration: 2 weeks.
- Course: resolve spontaneously & pass to CLINICAL LATENCY.

2. ASYMPTOMATIC INFECTION

- Features: latent period with no symptoms.
- Duration: variable & is about 10 years in average.
- Course: resolve spontaneously & pass to CLINICAL LATENCY.

3. SYMPTOMATIC SYNDROME

A) Persistent generalized LN.

B) Constitutional disease: fever, loss of weight, diarrhea.

C) Neurological disease:

- Encephalitis.
- Myelopathy.
- Neuropathy.
- Myopathy.

D) SECONDARY INFECTIONS:

- VIRUSES: CMV, HSV.
- MYCOBACTERIUM: TB, avium intracellulare.
- Pneumocystis carinii pneumonia.
- Fungal infections.

E) SECONDARY NEOPLASMS:

- Kaposi sarcoma.
- Non – Hodgkin's lymphoma.
- Burkitt's lymphoma.

INVESTIGATIONS

1. HIV ANTIBODIES: by ELISA appear within 2 weeks of infection.
2. HIV ANTIGEN: appear shortly after infection before the appearance of antibodies.

TREATMENT

1. ANTI – RETROVIRAL TTT: Zidovudine 600 mg / day orally.
2. TTT of opportunistic infections & malignancies.

FEVER WITH RASH

1. FEVER WITH SPECIFIC RASH:

- Measles.
- German measles.
- Chicken pox.
- Small pox.
- Scarlet fever.

2. FEVER WITH NON-SPECIFIC RASH:

- Rheumatic fever.
- SBE.
- Typhoid fever.
- IMN.
- Meningococcal meningitis.
- Secondary syphilis.
- Skin diseases.
- Drug allergy.

FEVER WITH RIGORS

- Malaria
- Miliary TB.
- Acute pyelonephritis.
- Amoebic hepatitis.
- Hemolytic crisis.
- Repeated blood transfusion.
- SBE.
- Septicemia.
- Cholecystitis.
- Cholangitis (Charcot's fever).
- ABSCESS (*Subphrenic, Hepatic, Perinephric*).
- ANY HIGH FEVER OF RAPID ONSET.

FEVER WITH SORE THROAT

1. LOCAL THROAT DISEASES

- Tonsillitis.
- Pharyngitis.
- Pharyngeal ulcers: TB, Malignant.
- Vincent's angina.

2. SPECIFIC INFECTIONS

- Diphtheria.
- IMN.
- Scarlet fever.

3. BLOOD DISEASES

- Leukemias.
- Aplastic anemia.
- Agranulocytosis (neutropenia).

FUO

- VVV important.
- Refer to “Approach to the febrile patient” in the “revision of infections”.

TREATMENT OF PARASITIC INFECTIONS

GIARDIA LAMBLIA

1. Metronidazole (Flagyl): 250 mg tds for 5-10 days.
2. Tinidazole (Fasigyn): 2 gm once.
3. Atebrine: 0.1 gm tds for 5 days.

ANKYLOSTOMA DUODENALE

1. Flubendazole (Fluvermal): 200 mg twice daily for 3 days.
2. Thiabendazole (Mintezole): 25 mg/Kg daily for 2 days.
3. Pyrantel pamoate (Combantrin): 11 mg/Kg once.
4. Levimazole (Ketrax): 150 mg once.
5. Biphonium hydroxy naphthoate (Alcopar): 5 gm once.
6. DO NOT FORGET TTT OF IRON DEFICIENCY ANEMIA.

ENTROBIUS (OXYURIS) VERMICULARIS

a) Antiparasitic ttt:

1. Flubendazole (Fluvermal): 100 mg once.
2. Thiabendazole (Mintezole): 25 mg/Kg daily for 2 days.
3. Pyrantel pamoate (Combantrin): 11 mg/Kg once.
4. Levimazole (Ketrax): 150 mg once.
5. Pyrivinium pamoate: 5 mg/Kg once.
6. Piperazine: 300 mg/day for 7 days.

NB A second dose is given after 2 weeks to treat auto-infection.
It is better to treat all family members.

b) Local measures:

1. Mercury ointment: to kill the female.
2. Local-anaesthetic: to prevent itching.

c) Hygienic measures:

1. Cut the nails.
2. Boiling of clothes & linens.

FILARIASIS

- Diethyl carbamazine (Hetrazan): 2 mg/Kg tds for 3 weeks.

HYMENELOPIS NANA

1. Niclosamide (Yomesan): 2 gm daily for 7 days.
2. Praziquantel: 25 mg/Kg single dose.
3. Atebrine: 100 mg tds for 7 days.

NB TTT should be repeated after 2 weeks.

TAENIA SOLIUM & TAENIA SAGINATA

1. Niclosamide (Yomesan): 2 tablets (tab = 0.5 gm), followed after 1 hour by 2 tablets.
2. Praziquantel: 10 mg / Kg single dose.
3. Atebrine:
 - 10 tablets (tab = 100 mg), followed by saline purge after $\frac{1}{2}$ hour to expel the worm & the drug.
 - The head of the worm should be searched for in the stools.
 - Side effects: jaundice, GIT irritation.

HYDATID CYST

1. Surgical excision.
2. Mebendazole: 40 mg / Kg / day for 6 – 12 months.
3. Albendazole.

FASCIOLA

1. Bithionol: 50 mg / Kg every other day for 10 doses.
2. Praziquantel: 75 mg / Kg in 3 doses, one day.

SCHISTOSOMIASIS

1. Praziquantel: Drug of choice for ttt of all types of Schistosoma.
 Dose: 40 mg / Kg orally single dose.
 Side effects: headache, dizziness, nausea, vomiting, diarrhea, myalgia, rash.
2. Oxamniquine: Drug for ttt of S. mansoni only.
 Dose: 20 mg / Kg orally for 3 doses.
3. Metrifonate: Drug for ttt of S. hematobium only.
 Dose: 10 mg / Kg orally repeated every 2 weeks for 3 times.
4. Niridazole: Effective against S. hematobium & S. mansoni.
 Dose: 25 mg / Kg / day orally for 7 days.
 Side effects: headache, dizziness, nausea, vomiting, convulsions.
5. Antimonials: no more used:
 - Tartar emetic, Stibophen.

ASCARIS LUMBRICIDS

1. Flubendazole (Fluvermal): 200 mg twice daily for 3 days.
2. Thiabendazole (Mintezole): 25 mg / Kg daily for 2 days.
3. Pyrantel pamoate (Combantrin): 11 mg / Kg once.
4. Levimazole (Ketrax): 150 mg once.
5. Piperazine: 3 gm once.